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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/743,651	12/22/2003	Mototsugu Okushima	NEM-05201	7582

7590

09/28/2004

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EXAMINER

FENTY, JESSE A

ART UNIT	PAPER NUMBER
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2815

DATE MAILED: 09/28/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/743,651	Applicant(s) OKUSHIMA, MOTOTSUGU	
	Examiner Jesse A. Fenty	Art Unit 2815	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 22 December 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-12 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-12 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>12/22/03</u> | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1-8 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Oh (U.S. Patent No. 5,986,863) in view of Lien (U.S. Patent No. 5,652,456)

In re claim 1-4 and 6, Oh (Fig. 4) discloses a semiconductor ESD device, comprising:

Two pieces of n-type well regions formed on a main surface of a p-type semiconductor region (10; Fig. 2);

A p-type second well region formed between the first well regions adjacent to each other,

Wherein each of the two pieces of the first well regions includes an n-type first diffusion region (24, 34) and a p-type second diffusion region (22, 32), both of which are formed therein, and

The first diffusion region (24) in a first of the first well region is connected to the second idffusion region (32) in the second of the first well region, the second diffusion region (22) in the first well region at the first position is connected to a first terminal (Vcc1), the first diffusion region (34) in a second well of the first well region is connected to a second terminal (Vcc2), and the first terminal being connected to a desired terminal to be protected and a second terminal is connected to a discharger terminal (column 1, lines 26-31).

Art Unit: 2815

Oh does not expressly disclose the second well region (40) comprising a plurality of diffusion regions. Lien (Fig. 8) discloses a P-type isolation structure comprising a plurality of diffusion regions (850, 851). It would have been obvious for one skilled in the art to use the plurality of highly doped diffusion isolation regions of Lien in place of the isolation region (40) of Oh for the purpose, for example, of increasing the strength of the isolation between layers.

In re claim 5, Oh in view of Lien discloses the device of claim 3, wherein the third diffusion region is formed only in the second well region formed between the highest potential first well region that is the first well region at the first well portion, which includes the second diffusion region (22) connected to the first terminal, and the first well region adjacent thereto.

In re claim 7, Oh in view of Lien discloses the device of claim 5, wherein each of the second well region and the third diffusion region is formed of a single region between the first well regions adjacent to each other.

In re claim 8, Oh in view of Lien discloses the device of claim 1. The limitation, “during normal operation ... integer” is a recitation of the intended use of the claimed device. A recitation of the intended use of the claimed invention must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim. See *In re Casey*, 152 USPQ 235 (CCPA 1967) and *In re Otto*, 136 USPQ 458, 459 (CCPA 1963). Since Oh and Lien disclose multiple N wells separated by multiple P wells, inherency dictates, unless the claim recites a different structure, that the prior art will function in the same manner as the claim, since the prior art structure reads on the claim.

Art Unit: 2815

In re claim 10, Oh in view of Lien discloses the device of claim 1, wherein no insulating film is formed in an internal region of the semiconductor substrate between the first diffusion region and the second diffusion region, which are formed in the one first well region.

3. Claims 9, 11 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Oh in view of Lien as applied to claim 1 above, and further in view of Applicant's Prior Art (APA).

In re claim 9, Oh in view of Lien discloses the device of claim 1, but does not expressly disclose a shallow trench isolation (STI) region provided between the first diffusion region and the second diffusion region. APA (Figs. 2B, 3B, 4B) disclose STI regions (e.g. 722) between first diffusion and second diffusion regions. It would have been obvious for one skilled in the art at the time of the invention to use STI regions as disclosed by APA for the device of Oh/Lien for the purpose for example, of providing better isolation between regions of opposite conductivity type.

In re claim 11, Oh in view of Lien discloses the device of claim 1, but does not expressly disclose an electrode material film formed on the surface of the semiconductor substrate between the first diffusion region and the second diffusion region. APA (Fig. 2B) discloses an electrode material film (731) formed on the surface of the semiconductor substrate between the first diffusion region and the second diffusion region. It would have been obvious for one skilled in the art at the time of the invention to form the electrode material as disclosed by APA (Fig. 2B) for the device of Oh/Lien for the purpose, for example, of enhancing the conductivity of the first and second diffusion regions.

Art Unit: 2815

The limitation, "which are formed ... by interposing ... therebetween" is language directed at the process for making the product and does not further distinguish the final structure of the device to that known to the prior art.

In re claim 12, Oh in view of Lien discloses the device of claim 1, but does not expressly disclose the at least one third diffusion layer coupled by metal wire to a power supply wire at a predetermined potential. APA (Fig. 4B) discloses an isolation region (940) with diffusion region (945) formed within. It would have been obvious for one skilled in the art at the time of the invention to connect the P-isolation region of Oh/Lien in the manner disclosed by APA for the purpose, for example, of increasing the strength of the isolation region between devices.

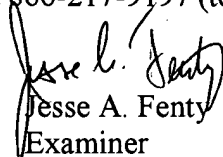
Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jesse A. Fenty whose telephone number is 571-272-1729. The examiner can normally be reached on 5/4-9 1st Fri. Off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tom Thomas can be reached on 571-272-1664. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Art Unit: 2815

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


Jesse A. Fenty
Examiner
Art Unit 2815